

Docket No.: MRE-0042

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Initial Application of

Ji Hyun HWANG et al.

Serial No. 09/988,296

Confirm. No.: 8448

Filed: November 19, 2001

For: SURFACE MOUNTING METHOD (As Amended)

: EXPEDITED PROCEDURE

: UNDER 37 C.F.R. §1.116

: Group Art Unit: 3729

: Examiner: A. Tugbang

: Customer No.: 34610

**REQUEST FOR RECONSIDERATION AND
REPLY TO RESTRICTION REQUIREMENT**

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Sir:

In reply to the Final Office Action dated April 30, 2004, reconsideration and withdrawal of the rejection and the Restriction Requirement are respectfully requested. Claims 16-31 are pending in this application.

I. RESTRICTION REQUIREMENT

The Office Action indicates that restriction is required. For the reasons given below, it is respectfully submitted that the imposition of the Restriction Requirement is improper and that it should be withdrawn. However, Applicants hereby provisionally elect Group I, claims 16-18 and 21-25, with traverse.

Because claim 16 is allowable, it is believed that a response to the Sub-Restriction Requirement is moot. However, to the extent claim 16 is not found to be allowable, Applicants also hereby provisionally elect Sub-Group I-A, claims 16-18, with traverse.

The originally filed application included claims 1-20. In a first Restriction Requirement dated April 15, 2003, Applicants were forced to select either claims 1-15, directed to a surface mounting machine, or claims 16-20, which were directed to methods of mounting. Applicants selected claims 16-20 and canceled claims 1-15.

The Examiner then examined all of claims 16-20 and issued a first Office Action, dated July 23, 2003, that rejected claims 16-20 in view of prior art references. In response, Applicants made a number of minor clarifying amendments to claims 16-20 in the Amendment filed November 24, 2003. However, these changes did not change the basic nature of claims, and in particular, the basic nature of claims 19 and 20. The claims were and are directed to surface mounting methods.

Because the Examiner has already conducted a full prior art search for the subject matter of independent claim 19, and has issued an Office Action rejecting the claim in view of prior art, it is respectfully submitted that the imposition of a Restriction Requirement that restricts claim 19 from claim 16 is highly improper this late in the game. For at least this reason, the Examiner is requested to withdraw the Restriction Requirement at least in so far as it applies to claims 19, 20 and 26.

Furthermore, new independent claim 27, which was added in the November 24, 2003 Amendment, is directed to subject matter that is quite similar to the subject matter of independent claim 19. It is respectfully submitted that a thorough search for the subject matter of claim 19 (which has already been conducted by the Examiner) would have encompassed a search for the subject matter of claim 27. For at least these reasons, the Examiner is also requested to withdraw the Restriction Requirement in so far as it applies to claims 27-31.

II. REJECTION UNDER 35 U.S.C. §102(b)

The Office Action rejects claims 16-18 under 35 U.S.C. §102(b) as being anticipated by Burt et al., U.S. Patent No. 5,812,693 (hereinafter "Burt"). The rejection is respectfully traversed.

Independent claim 16 recites transporting a printed circuit board loaded on a first multi-layer transfer unit to a first conveyor under control of a controller, discharging the printed circuit board from the first conveyor to a second multi-layer transfer unit under control of the controller, transporting the printed circuit board loaded on the second multi-layer transfer unit to a second conveyor under control of the controller, and discharging the printed circuit board from the second conveyor to the first multi-layer transfer unit under control of the controller.

The multilayer transfer units recited in claim 16 are designed to hold multiple circuit boards. The multilayer transfer units are also designed to selectively supply individual circuit

boards to a conveyer, or to receive a circuit board from a conveyer and store the circuit board on a particular level of the transfer unit. As explained below, Burt fails to disclose or suggest a method that utilizes such multilayer transfer units.

Burt discloses an integrated vision inspection and rework machine 40 for inspecting and reworking printed circuit boards 30 by comparing a digitized image of the components and their location on the printed circuit board 30 against a database of master artwork. With reference to Figure 4 of Burt, printed circuit boards 30 are fed into the system on a first conveyer 43. The boards are carried by a second conveyer 74 from the first conveyer 43 to an image acquisition unit 48. After a visual inspection is performed by the image acquisition unit 48, the printed circuit boards 30 are transferred to a third conveyer 45.

If a circuit board is found to be acceptable by the image acquisition unit 48, the third conveyer 45 will forward the circuit board 30 on to a main manufacturing line conveyer 43. However, if the image acquisition unit detects a problem with a board, the board is carried by a first divert conveyer 49 to a circuit board buffer unit 41. Defective boards are stored in the buffer unit until a re-working procedure can be performed on the defective boards at a rework station. Although Burt discloses that multiple boards 30 may be stored in the buffer unit 41, Burt does not disclose or suggest that the PC board buffer unit 41 is a multi-layer unit.

When the re-work station becomes available, a faulty board 30 is forwarded from the buffer unit 41 to a rework station 52 (See Figure 3) by a fourth "rework" conveyor 90. The

defects in the board are then manually repaired at the rework station 52. When rework is complete, the fourth “rework” conveyer carries the board to a second divert conveyer 49. The second divert conveyer 49 then transfers the board back to the first conveyer 43 so that it can be sent back through the image acquisition unit 48.

At best, Burt discloses the use of a single multi-layer buffer mechanism 41, which can receive multiple circuit boards from a conveyer, store the boards, and then supply selected boards back to a conveyer. Burt fails to disclose the use of any sort of multilayer transport unit as recited in claim 16. Burt also fails to disclose or suggest a method with the steps of claim 16.

For instance, if we assume that the buffer unit 41 corresponds to the claimed first multilayer transfer unit, claim 16 requires that a circuit board be transferred from the first multilayer transfer unit (the buffer unit 41) onto a first conveyer. This would make the conveyer 90 in Burt correspond to the claimed “first conveyer” recited in claim 16. Claim 16 then requires that the circuit board be discharged from the first conveyer (the conveyer 90 in Burt) to a second multilayer transfer unit. But Burt fails to disclose the use of any second multilayer transfer unit. Certainly, the conveyer 90 in Burt does not carry the circuit board to any sort of multilayer transfer unit. Instead, the conveyer 90 in Burt carries the board to the rework station 52.

The Examiner appears to have taken the position that the entire rework system of Burt, which is labeled with reference number 40, corresponds to a multilayer transfer system. But

Applicants can find no support for this position in the specification or drawings of Burt. When circuit boards are transferred between the different positions of the rework system 40 they always remain at the same level and they are simply transferred between the positions by conveyers that are all located in the same horizontal plane. For this reason, the rework system 40 itself cannot be considered a multilayer transfer.

Because Burt fails to disclose or suggest a method that includes the use of both a first and a second multilayer transfer, and because Burt fails to disclose or suggest any method that corresponds to the steps recited in claim 16, it is respectfully submitted that claim 16 is allowable. Rejected dependent claims 17-18 are allowable at least for the reasons discussed above with respect to independent claim 16, as well as for their added features. Withdrawal of the rejection of claim 16-18 is respectfully requested.

If the Examiner finds that claim 16 is allowable, presumably the Sub-Restriction Requirement will be withdrawn, and claims 21-25 will be examined along with claims 16-18. In that event, Applicants wish to point out that the dependent claims also recite many features that are not shown or suggested by Burt. For instance, claim 21 recites steps of lifting a board, mounting parts on a board and lowering the board. Claim 22 and 24 recite moving the first and second multilayer transfer units in vertical and horizontal directions. None of these features are disclosed or suggested by Burt.

Serial No. 09/988,296
Amendment dated September 24, 2004
Final Office Action dated April 30, 2004

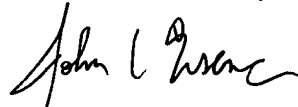
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III. CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **John C. Eisenhart**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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